Geo. M. Waddell

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THE

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HORTICULTURIST,

AND

REGISTER OF RURAL AFFAIRS.

ADAPTED TO THE

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THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. III. FOR JANUARY, 1843. No. 1.

ON THE APPLICATION OF THE PRINCIPLES OF VEGETABLE PHYSIOLOGY AND CHEMISTRY TO AGRICULTURE.

BY HENRY R. MADDEN, M. D.

1. *Soil.* Science has already proved, in the most satisfactory manner, the following circumstances regarding soil:—

1*st.* In order that it may be fertile.

(1,) It must contain all the mineral matters found in the ashes of the plant destined to be cultivated upon it, in such a condition as to be available by the plants, and in sufficient quantity to enable the supply to be kept up by some economical mode of cultivation.*

(2.) It must consist of a due admixture of impalpable matter and larger sized particles, so that it may be porous and easy permeable by air and moisture, while, at the same time, there is a sufficient supply of matter in a state capable of undergoing chemical changes.

(3.) There must be a sufficient supply of organic matter mingled with it, in a state capable of decomposition by the action of air and water.

2*d.* To be fit for profitable cultivation.

(4.) It must be free from any mineral substance which is destructive of fertility.

(5.) It must be capable of being reduced to a sufficiently fine tilth, without an undue amount of labor.

(6.) It must either be naturally capable of letting off any excess of water which may fall upon it, or it must be capable of being made to do so artificially by *draining*.

(7.) It must possess a structure which will allow the decomposition of organic matter mingled with it, to proceed at a regular rate, being neither so fast as to waste the manure, nor so slow as to keep the dung too long fresh.

(8.) Its situatinns must be such as to admit of all the operations of husbandry being performed in a proper manner, without occu-

* In all these statements we shall speak of the circumstances proved by science, as they influence practical agriculture, and not as abstract questions of philosophy.

pying too much time; and the climate must permit of the plants arriving at perfection.

3*d*. To be capable of continued cropping, the farmer must endeavor to keep up the essential qualifications of the soil in the following manner:

(9.) It must be ploughed and harrowed, and subjected to any other operation which may be necessary to pulverise it.

(10.) It must have its supply of organic matter, and part also of the mineral ingredients, renewed by returning to it from time to time in the shape of manure, what has been removed in the form of crops.

(11.) It must be kept in an active state, by having fermenting substances added to it at certain periods.

4*th*. To correct any natural faults which the soil may possess, it must be subjected to various processes which have been proved by experience to cure the faults in question; these we shall mention presently, and note under each head what are its effects, and under what circumstances it should be had recourse to.

We shall explain the reasons for all these requisites, and point out the practical advantages of being intimately acqaainted with them; and likewise allude to what science may still effect, so as to increase our knowledge upon each point.

(1.) In order that soil may be fertile, it must contain all the mineral matters found in the ashes of plants destined to be cultivated upon it, in such a condition as to be available by the plants, and in sufficient quantity to enable the supply to be kept up by some economical mode of cultivation.

The necessity of this condition depends upon the well established fact, that plants cannot make for themselves any of the elementary substances which they contain, but are only capable of changing the form in which these are combined with one another. Thus, the organic portion of plants, or that which is destructible by fire, is composed of four elementary substances, namely, carbon or charcoal, and three gasses named oxygen, hydrogen, and azote. Now, plants cannot produce any of these four substances under any circumstances whatever: but if they are supplied with them in almost any state of combination, they can by their vital processes, convert them into starch, gum, woody fibre, or whatever else they may require. The same is the case with the constituents of their ashes. They must be supplied with the requisite elements in some state of combination, and then they will be able to produce for themselves the particular compound which they require.

Farmers have hitherto paid far too little attention to this; they have never been supplied with the information requisite for discovering the substances of which their crops are composed, and therefore they are not capable of judging correctly regarding the

results which they obtain; for example, if one sees that a plant will not grow on a sandy soil, he tries it upon clay, and finding it to succeed there, at once feels satisfied that the latter is the soil most fitted for its growth; but another farmer sowing the same seed upon clay land obtains so poor a return that he determines to try it upon sand, and in this instance obtains an abundant crop, so of course is equally convinced that sand is the proper soil for the plants, and that to sow it upon clay is to waste both the manure and the seed. Now chemical analysis would have proved in this instance, that the rocks from which the first farmer's clay and the second's sand were produced, contained a good supply of some peculiar compound, which compound also existed in the ashes of the plants in question, and consequently the knowledge of this fact would have prevented both failures, and would have enabled each each farmer to determine the true cause of his success, without leading them to contradictory conclusions. Such knowledge as this is quite practicable, even in the present state of the science; for the ashes of most cultivated plants have been analyzed, and all rocks have been most minutely examined, so that any farmer possessine a sufficient acquaintance with mineralogy or geology, to enable him to determine the species of rocks which has given origin to his soil, will, by referring to any work containing the analysis of minerals, be able to learn pretty accurately the contents of his soil; and some other book of reference will give him the composition of his crops; a comparison of the two will lead him so far towards a just conclusion as to what crops will best suit his particular farm. We must admit, however, that a considerable increase of knowledge is required before this can be brought to perfection; for, even after the comparison of the analysis of soil and crop, as above recommended, had shown a sufficient similarity of composition to warrant the belief that a plant would thrive well in some particular situation, the farmer might find that, after all, his crop was so scanty that it was not worth his while to expend any trouble upon its cultivation. Although science has already done much, more exteneed and minute research is greatly needed before this branch of the subject can be considered as at all approaching perfection; and we have no hesitation in affirming, that we believe much of the future progress of agriculture will depend upon increased knowledge in this wide field of chemical inquiry.

(2.) Soil, to be fertile must consist of a due admixture of impalpable matter and larger sized particles, so that it may be porous, and easily permeable by air and moisture, while, at the same time, there is a sufficient supply of matter in a state capable of undergoing chemical changes.

No fact has been more satisfactorily proved than the necessity of impalpable matter in soil; indeed, we may estimate pretty nearly the value of all soils, with the exception of clays, merely

by determining the quantity of impalpable matter which they contain.*

The value of the impalpable matter is threefold. *First.* Many of the most useful ingredients of soil are of value to plants until they are reduced to this extremely fine state of subdivision. *Second,* Even the alkalies, and other soluble components of rocks, are scarcely at all dissolved by water until the rock has crumbled to the finest dust. *Third,* All the useful organic matter of soil is in a state of combination with this powder, so that, in fact to a certain extent, the whole value of the soil resides in this portion alone. But larger sized grains are absolutely necessary to make the soil fertile; not that they are themselves directly useful to plants, but because, without them, the other ingredients could not act effectively. This depends upon the necessity of air and water getting free access to every part of the soil, which could not be the case were it composed altogether of impalpable powder; because this would become so compact after it had once been moistened, that it would form a cake quite impermeable by air; and after it had once become thoroughly dry, almost equally impermeable by the roots of plants. Were it not that the larger particles are continually crumbling down, and adding to the impalpable powder those materials which would otherwise become gradually exhausted, and thus serve to keep up the original fertility of the soil, it would be of very little consequence of what these grains were composed; for until they are reduced to powder, they exert no direct influence whatever upon the vegetation of the soil, of which they form a part. The practical advantage of knowing the above facts will afterwards be shown.

(3.) There must be a sufficient supply of organic matter mingled with the soil in a state capable of decomposition by the action of air and water. Vegetable physiologists are much at variance as to the exact manner in which organic matter in soil affects the vegetation upon its surface, owing to some experiments which have proved the *possibility* of plants growing in soils destitute of all organic matter; but still they are quite agreed that, for the purpose of farming, there must be a good supply of elements entering into organic products; nay, they will admit that *cæteris paribus*, the quantity of vegetable and animal matter in soil is a direct index of its felity. This being the case, we need scarcely remark, that a knowledge of the fact must be valuable to the practical farmer, because the process necessary to insure good crops must be greatly varied according to the abundance or scarcity of organic matter in

* This experiment is easily performed. Take a glass tube about an inch in diameter, and two feet long, closed at one end; put into the tube about two inches of soil to be examined; fill the tube three parts full of water, and shake well place it upright, and let the soil subside; the impalpable matter will form the uppermost layers of the deposite, and its quantity per cent. is easily found by measurement and calculation.

the soil. If in poor land this matter abunds, something must be done to bring it into a more active state; if it is deficient, good crops can never be raised until a good supply is given it in the form of animal or vegetable manure. On this point we may expect great assistance from science; for hitherto we are very ignorant of the exact requisites, as regards organic matter in a soil, to suit for each particular crop; and yet experience daily proves to us that there exists some peculiar relation between the two, which it has hitherto baffled all the endeavors of chemistry to detect. Should this difficulty be overcome, which we by no means despair of, the art of agriculture will acquire a degree of precision and certainty quite unattainable in the present state of our knowledge.

(4.) Soil, to be fit for profitable cultivation, must be free from any mineral substance which is destructive of fertility. We need scarcely offer any explanation of a fact which is so self-evident; because, however well a soil may be supplied with all the requisites of fertility, if it contain a single substance which is destructive to the growth of plants, it will of necessity follow that the soil must remain useless until this injurious matter is removed. The evident advantage of knowing the substance producing the sterility is, that chemistry can in very many instances suggest some practicable method by which the fault may be overcome. Thus, if the barrenness depend upon an acid, lime will cure it; if upon some soluble salt of iron, here again lime is needed; if upon some compound of magnesia, free exposure to the air will overcome the bad effects.

(5.) Soil must be capable of being reduced to a sufficiently fine tilth without an undue amount of labor, in order that its culture may be profitable. It does not require the aid of science to explain this statement, as it is one purely of economy; but we have thought it advisable to enumerate it here, were it for no other reason than to let the farmer see that, when studying theoretical agriculture, we do not forget that a process must be profitable before it can be advantageous. Were it not for this, the geologist might probably be loud in his praises of some plot of land of excellent qualities, but which was so stiff from an excess of clay, that it would require more labor and time to pulverize it, than could ever be recompensed even by the heaviest returns.

(6.) Soil for a good farm must either be naturally capable of letting off any superabundance of water, or it must be capable of being made to do so sufficiently by draining.

The immense advantages of draining have been far too fully treated of by many of those who have devoted themselves to the improvement of the soil to require any lengthened observations upon the subject here, because every farmer has already had his mind impressed with the importance of this process; and the disadvantages of an excess of water in soil have been so fully demonstrated as to require no additional proof in this place. It

follows, therefore, if a soil be so situated as, on the one hand, to be exposed to the deteriorating effects of an excess of water, and, on the other, to offer insurmountable obstacles to drainage, this soil, however well constituted otherwise, is completely useless to the farmer, at least in the form of arable land.

(7.) Soil, to be useful to the cultivator, must possess a structure which will allow the decomposition of organic matter mingled with it to proceed at a regular rate, being neither so fast as to waste the manure, nor so slow as to keep it too long fresh. In a practical point of view this deserves the greatest attention; and although the fact that sand may be too light and clay too heavy, has long been acknowledged by farmers, still science has taught us at least two valuable facts concerning this, viz., 1st. The cause of the fault in both instances; and 2d, the means of, in a considerable degree, overcoming it, by suiting the manure to the texture of the soil; or, if this cannot be effected by employing means which will in some degree alter its texture. 1st, the cause of manure wasting upon very light lands depends upon organic matter being decomposed and converted into gaseous matter which escapes into the atmosphere by the joint action of air and moisture, and of this action becoming more rapid, the more freely the organic matter is exposed to the air, provided it is at the same time supplied with a sufficient amount of moisture, without ever being *very wet*. Now, this is exactly the condition of manure in light sandy soils; the looseness of their texture admits of the freest circulation of air through their interstices, and at the same time allow all excess of water to flow through the soil during wet weather, while it facilitates the rising up of moisture from the constantly damp subsoil in time of drought; the result therefore is, that the manure is always freely exposed to air, is kept moist, and never allowed to remain long *very wet*. Thus, the very condition in which decomposition takes place with the greatest rapidity is constantly preserved, and the manure in consequence yields its most valuable ingredients to the air, instead of to the roots of the plants, and every wind which blows over the surface of such a soil wafts away, for the benefit of the whole neighborhood, and which ought to have been limited in its influence to the spot to which it was applied. The very reverse of this is the case with stiff clay; here the access of the air is greatly impeded; in fact, unless such land is very well wrought, no air can pierce below its surface, except such as is dissolved in the water which falls upon it, and the escape of water is so much retarded, that all substances contained under its surface are kept constantly *wet*. Manure, in this instance, is in the best condition to withstand decomposition, because, if thoroughly wetted, it is acted upon by the air dissolved in the water, but after that is exhausted no further change takes place except by very slow degrees. But a manure to be useful must be in a state of decomposition, for, until decomposed to a certain extent, it is of no value what-

ever to plants, the result, therefore, in this case is, that however much manure is given to the land, the greater quantity remains in a useless state, until, by the alternate drying and wetting of the soil by change of weather, its decomposition is at length effected. 2nd, The practical value of a correct knowledge of the above facts is evidenced by its enabling us to correct the faults, in a certain degree, by a proper choice of manure; for example, in the case of very light lands the farmer should avoid using those manures which are most easily fermented and dissipated, and should employ in preference such as take a longer time to enter into decomposition, as, for instance, woollen rags, wool waste, &c., and the cooler kinds of excrement, preferring that of the cow and sheep to that of horses and pigs.

Again, if circumstonces do not admit of so free a selection, he should apply his farm-yard dung in a much fresher condition than he would to his clay land, and as near the time of sowing as he conveniently can, because the more fermented it is previous to its application, and the longer it lies on the bare ground, the greater will be the amount of loss. The treatment of land of too stiff a texture is two-fold. *First*, By selecting the most putrescent manures, and either having them well prepared before they are applied, or ploughing them in some time previous to the sowing of the seed; *secondly*, Should circumstances permit, there are many cases in which, to a certain extent, a permanent cure can be effected, and the texture of the soil altered and rendered more open, by sufficient drainage, deep ploughing, and *paring and burning*.

We shall comment at large upon these under the fourth division, in which we purpose to consider the cures for many of the natural defects in soil.

(8.) The situations of soil must be such as to admit of all the operations of husbandry being performed in a proper manner, without occupying too much time; and the climate must permit of the plants arriving at perfection.

This is another purely practical observation, requiring no explanation further than to prove that in treating of a practical subject science must bind herself by laws to which she is in general a stranger. For example, were a chemist merely required to answer such a question as this, "Is the soil, of which the accompanying is a specimen, fit for cultivation?" he would analyze it, and finding all the requisites of a fertile soil, at once pronounce it well worthy of the attention of its possessor, whilst it might have been taken from the side of some hill far too steep to admit of horse labor, and exposed to a climate so bleak, that no crop could ever yield a profitable return. In this instance, a soil in itself excellent is rendered useless by external circumstances; but in order that the farmer may profit by the suggestions of the chemist, I need hardly remark, that *every* modifying condition, whether external or inter-

nal, must be carefully weighed before pronouncing a decided opinion.

(9.) In order that the soil may be advantageously subjected to continued cropping, the farmer must keep up its essential qualities by ploughing, harrowing, and any other operation necessary to pulverize it. The value of the impalpable matter in soil has been already alluded to under (2,) and we shall accordingly confine ourselves in this place to the enumeration of the practical advantages arising from a knowledge of the facts there brought forward.

The effect of ploughing, harrowing, &c. &c. is two-fold: 1st. It loosens the soil and renders it more porous; 2d, it pulverizes it: both of these are of the greatest value; for while the first prepares the soil for a freer admission of air and moisture, the latter renders these capable of acting chemically upon the different ingredients contained beneath its surface. The necessity of pulverizing is evident, because, as far as plants are concerned, it is of little consequence whether their roots come in contact with an agglutinated mass of powder, or a stone; both are equally impenetrable, and hence both are equaliy useless; so that a soil badly pulverized is in many respects similar to a very stony soil, with one exception, viz. that the masses of matter which are capable of being reduced to powder, being more porous than stone, are capable of absorbing a greater quantity of the liquids contained in soil, and thereby impoverishing the land; it is therefore of the greatest consequence for the fertility of the soil, that it should from time to time be pulverized to the greatest extent of which it is capable, without the expenditure of *too great* a quantity of labor. All must be aware that Jethro Tull was so deeply impressed with the importance of this pulverizing of the soil, that he frequently affirmed that, if properly performed, it might altogether supercede the necessity of manuring. Of course this idea is extravagant, but still, as it resulted from practical experience, it tends to show in a forcible light the great value of the operation. In process of time, science may enable us to employ some more efficient method for increasing the quantity of impalpable matter in soil, in a shorter period than it can be effected by the gradual disintegration of the stones by the influence of the weather, and thus render the loosest sands capable of profitable cultivation.

(10.) Soil intended for continued cultivation must have its supply of organic matter, and part also of its mineral ingredients, renewed by returning to it, from time to time, in the shape of manure, what has been removed from it in the form of crops. We have already observed that physiologists are far from being at one in their ideas regarding the exact manner in which the organic matter of soil influences its vegetation, but still they all acknowledge the practical advantage of a good supply; may, however, suppose that the value of manures consists merely in their mineral ingredients, while others place all their value in one single element

of their organic portions, namely their azote. Be this as it may, we have still the fact acknowledged by all, that to keep up the productive power of a soil, it must be supplied with manure. Much practical advantage may be gained by studying carefully the relation subsisting between the composition of a soil, and that of the manure best suited for it, because it will invariably be found that that manure acts most beneficially which contains the best supply of whatever is deficient in quantity in the soil for which it is intended, and that much good material is constantly lost or rendered unprofitable by the absence of any attempt to accommodate the manure to the soil. When the researches of the chemist shall have enabled him to decide with accuracy as to the peculiar food best adapted for each crop, this accommodation will be capable of being carried to a much greater extent than it possibly can be at present.

(11.) But the *condition*, as well as the *composition* of the manure must be attended to, because soil must have its activity preserved by adding to it, at certain periods, substances in a state of fermentation. Numerous facts tend to prove that the success of many crops depend upon the existence of fermenting matter in the soil, and that however rich it may be in other respects, these crops can only be advantageously cultivated after a fresh addition of manure; this is particularly the case with the turnip. Without dung the richest soil will bear but an indifferent crop; while with manure, very poor soil, if it be not too wet, will at all times give a good return. Science has not yet been able to account for this satisfactorily, although many of her votaries are willing to acknowledge its truth, and it is obvious that an acquaintance with the fact must be of the greatest value in assisting the farmer in his arrangements, for he will of course apply dung when he intends to raise a crop requiring the existence of fermenting matter, and thus ensure its success while he does no injury to the following crops, whose growth is to a certain extent, less dependent on the condition of the soil.

4. It frequently happens that the farmer is not contented with his soil in its natural condition, on account of certain defects under which it labors, and which the recorded experience of his ancestors has informed him can be overcome or counteracted by certain processes which he may carry into effect with more or less facility, according to circumstances. The chief of these are draining, liming, and paring and burning; and our object in mentioning them here is to point out what is really effected by each, so that farmers may be prevented from misapplying them from ignorance of their peculiar mode of action. [*Quarterly Journal of Agriculture.*

(To be continued.)

FALL-PLOUGHING AND SUBSOILING.

IN a late journey through Chester and Lancaster Counties, (Pen.) I remarked numerous instances of fall-ploughing, and cannot but attribute much of that first and most important step in improvement, to the many excellent papers on that subject which have appeared from time to time in the pages of the Cabinet. Some of the practitioners have added another *step*, and have spread their lime on these winter-fallows,—a most essential one in the routine, and which it only remains to follow up by a *third*,—I mean *autumnal subsoiling*, when the system might be pronounced perfect. By this additional labor, the only objection that I have ever yet heard to fall ploughing, is completely done away, and all difficulties are obviated; as there will then be no fear of the washing away of the fresh-turned soil during the rains and frosts of winter, as these will find their way into the loosened subsoil and fertilize it to an astonishing degree, by the time the spring season of working has arrived; not a particle of loss accruing, but much benefit to the next year's crop. Not that there ever has been, in my estimation, the least suspicion that any absolute loss would accrue in this way from fall-ploughing, even although the process of subsoiling should be omitted; but then it would be necessary to cut diagonal lines or furrows across those lands which lie on a declivity, to conduct the surface-water and prevent the washing of the ploughed land into gullies, taking especial care that these diagonal furrows be carried at so small an angle of descent as merely to take the water away on an easy run; else, they will be found to increase the danger they will be found to increase the danger they were intended to obviate, and form those gullies which they were made to prevent. With this care and attention, the benefit of fall-ploughing will be found an unmixed source of pleasure and profit; pleasurable, because expediting the labors of the spring, and ennabling the occupier of the soil to enter earlier on his labors at that busy season; profitable, by enabling his land to withstand a drought without flinching, as well as be the means of relieving his soil during a wet and unkindly season; all which is effected, by laying up the land by a deep furrow early in the autumn to the influence of a winter's frost and snow. These advantages I have often urged upon the notice of my agricultural friends, aided by the pages of the Cabinet, the *last number* of which is generally my travelling companion; pointing out to them at the same time, the perfect indifference they exhibit on the score of *washing* of the soil, when they sow their crops of wheat in the autumn, although the land has been repeatedly ploughed and pulverized, and made light by manuring after oats, by which the soil is rendered so porous as to be in the greatest danger of washing to a ruinous extent: but the universality of the practice has rendered it familiar, and not a thought about the injury they are liable to sustain ever enters their imaginations; nor

is there in fact any cause for fear; the certain good arising from the practice, overbalancing the imaginary evil a hundred fold.

But let it be remembered, that the earlier fall-ploughing is performed, the better, so that the fresh-turned land may derive benefit from exposure to the fertilizing influence of the sun's rays, which would be found of importance equal to a covering of manure; the first drying of the land and the after slaking by means of the rains, rendering the soil so porous as to admit the frosts and snows to shake and pulverize it the whole depth to which it had been turned, and preventing the evil so greatly feared, namely, a washing away of the surface. In my opinion, there is no improvement in agriculture at all comparable to a rigid observance of fall-ploughing, when it is carefully and seasonably performed, and accompanied by a coat of lime as a top dressing, so to lie during the winter, whether the land be designed for oats, to be harrowed in early in the spring without a second ploughing; or for corn, peas, potatoes, barley, or any other crop; convinced as I am, that such an expenpenditure of the lime is the proper mode of application; after which, the land might be manured, without fear that the ripening of the crop will be delayed, so as to be liable to the rust,—a common occurrence, if lime be added to the manure on fallowed land in the autumn, preparatory to the sowing of wheat; for it is the nature of lime, by its antiseptic properties, to retard the action of the dung, so as to cause it to be giving out its energies long after the time has arrived for vegetation to cease, and the ripening process to follow,—the only satisfactory mode with which I am acquainted, of accounting for the fact, that lime operates injuriously on wheat, by causing the crop to grow and continue green for too long a period.

To those, however, who have not subsoiled their land the present autumn, I would say, do not hesitate to adopt that plan of deepening and improving your soil, in the coming spring. A single trial of that most remarkable instrument, the subsoil plough, will convince any man of reflection, that the process must be beneficial to all parties,—to the soil, to the crops, and the owner of the land; and if persevered in, these benefits will ultimately be of such valne, as to stamp the system of subsoiling as one of the greatest improvements of the age. I consider it peculiarly adapted to the Counties of Lancastar and Chester, as many of their lands are high and rolling, with hard and gravelly subsoils, over which the common plough is apt to pass, especially in seasons of drought, with but little effect; on these, a pair of horses will be able to work a subsoil plough to great purpose, and with such ease as to astonish those who have never witnessed its operations; much, however, depending upon the nature of the subsoil, and the depth to which the plough is sent. An ox-team is better adapted to the labor than horses; the only objection to them is, they are slower in their pace than horses, and will in a degree retard their working.

as one team cannot proceed faster than the other; but this can be obviated by employing oxen for both ploughing and subsoiling; and in many cases the first furrow can be turned by one pair, and the subsoiling be done by another, it not being so necessary to penetrate with the first furrow so deep as would be requisite, were no subsoiling to follow. In the case of balks, too, the subsoil plough following, the evil is remedied effectually, without pulling back.

I find upon inquiry, there are two sizes of the subsoil plough for sale at No. 176 Market-street, Philadelphia,* the smallest of which will be found large enough for common purposes, stirring the subsoil to the depth of a foot or more. A third size is, however, being manufactured, suitable for a single horse; but whether the latter will be large enough to answer the purpose of stirring effectually the subsoil, is yet to be seen; its small dimensions would seem to fit it for horticultural purposes, and the lands of small occupiers, where one horse only is kept, but the fear is that such an implement will not be equal to the task, and then discredit might arise to a system from which, if effectually pursued, there would be no question of the most beneficial results; these, however, must not be expected to show their full effects the first season, as much of the richness of the surface-soil will at first be expended in penetrating into and fructifying the subsoil; and if this be removed to a great depth and be very sterile, the process might not be completed the first year. It is to those only who contend manfully that the promise is made,—"In due time ye shall reap, if ye ye faint not."

VIR.

Nov. 20th, 1842.

[*Farmer's Cabinet.*

LIME AS A FERTILIZER.

THE first step of the inquiry how much lime acts, is to ascertain what it does.

A. It enters into the composition of plants, and, of course, of the soils on which they grow.

Lime in 1,000 lbs. each of

	Wheat.	Barley.	Oats.	Potatoes.	Turnips.
Straw and	1	1.0	0.9	0.3	0.8 lb.
Tops,	2	5	1.5	13	6
or per acre average,	8.6	14.9	7.6	46	80

whilst we add to the soil 100 to 200 imperial bushels per acre, or more, with evident advantage. See below (1.)

B. It tends to loosen clays, and render them dryer; whilst on light sandy soils it produces a binding and moistening effect (9.) Wet, stiff, and humus soils requiring much larger quantities than light soils containing little humus (2.)

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* They are also to be had of J. D. Legare, No. 81 East Bay, Charleston.

C. It corrects acid and hurtful ingredients in the soil; kills worms, insects, and some weeds and germs (7;) must not, therefore, be brought into contact with corn and other seeds in quantity sufficient to endanger their germination. Lime-water is said to kill grass (7;) and it acts wastefully (2) upon dung, unless first well mixed in with the soil.

D. It converts heath and moss into pasture; renders herbage closer, firmer, more palatable and nutritious; and is said to prevent the rot and fot-rot in sheep feeding on such herbage, (1, 2, 6, 7.)

E. In arabale, it increases the crops (1, 2, 3, 5,) and ripens them earlier (8.)

F. Produces heavy crops, in some cases where dung will not (1, 2, 8;) but not many such crops in succession (4.)

G. Gives better ear and grain than dung alone, and never lays the corn (10.)

H. In too large proportion to mould or dung reduces fertility, drying up the plant; lime and dung, must be applied alternately (4.)

I. Renders humus, &c. soluble and effective, thus exciting rich soils, and exhausting poor ones (2, 3, 4.)

K. Excites heavy clays and sour mounds, producing better crops, as well in quality as quantity (6, 7, 8)

Besides many effects of less importance, referable to the same principles; and, perhaps, others, which I may have failed to recollect or refer to.

From these observations, compared with its known chemical properties, we infer that lime

FEEDS THE PLANT.

1. Directly, in supplying the quantity of lime necessary for its healthy growth; which, however, is so small a portion (see A,) of the quantity beneficially employed, that we must look for other more extensive effects.

2. Indirectly by acidifying humus (5,) and rendering it soluble; and by promoting the decomposition of dead roots, and organic matters (F,) generating soluble compounds and fertilizing gases. (C,) as carbonic acid, ammonia, and some others, most of which are taken up by the moisture of the soil, and enter the sap by the roots, with the humate of lime, and other soluble organic matters produced; thus supplying the plant with organic ingredients.

3. Also indirectly, by decomposing the insoluble alkaline silicates, and some other salts; thus giving them the solubility requisite for being taken up by the roots, and supplying the sap with alkalies, and other requisite inorganic matters.

4. Of course by thus bringing all these substances into use it must gradually exhaust them, unless replaced; hence the danger of over-liming. Without humus, and probably nitrogen, lime seems to dry up the plant.

5. Further indirectly, its alkalescent property disposing the soil to absorb oxygen, thus acidifies, besides the humus and carbonaceous matter; and nitrogen (producing nitrates,) which not only enters into the plant, but powerfully promotes its appropriation of other organic elements, both from the sap and from the air. This effect of lime is however, very slow, unless under particular circumstances.

ACTS ON THE SOIL.

6. Thoroughly pervading it (when properly applied,) its slaking quality making it easy to spread and mix, and its solubility in water diffusing it generally. Even the carbonate of lime is soluble in the water of the soil, by aid of the carbonic acid generated there, or brought down by the rain and dew. By this solubility it is gradually washed down by the rains, &c. and of course lost to the soil, in course of years.

7. Its alkalescent property destroys hurtful ingredients, neutralizing acids, and decomposing salts of iron, magnesia, and alumina (C,) rendering the oxides insoluble and subjecting them to peroxidation, when they are rather useful than otherwise; while the acids, generally sulphuric, phosphoric, or humic, combining with the lime, produce well-known fertilizers, gypsum, bone earth, &c. Its solubility also enables it to follow and kill some worms, insects, weeds, and germs; of course it may also kill or damage our seeds and young plants, if incautiously applied.

8. Its strong chemical affinities thus inducing a variety of combinations and decompositions, liable again to changes from wet and dry, heat and cold, keep the soil in continual chemical activity, evolving electricity, one of the most active promoters of vegetation. The rich verdure following a thunder-storm is well known. These electical reactions of the soil probably contribute, with the dying tendency of lime (H,) to forward the ripening.

9. All these results are produced the most effectually by lime in its caustic state; its activity diminishing in proportion as it absorbs carbonic acid, but the property of loosening stiff soils (B,) continues where it is quite saturated and mild.

10. Lime is said to increase the ear, and never to lay the corn (G,) but appears to dry it up where organic manures are deficient (H;) this is a remarkable distinction from the nitrogenous fertilizers; which, in excess, produces a deep green, rank vegetation, running to leaf and straw, producing little ear, and laying before harvest. Thus they appear to correct each other. The examination of the difference is not the least interesting part of our present inquiry.

Nitrogen (in its general fertilizing compound — ammonia,) promotes vital transformation in the sap; hence rapid appropriation of organic elements, and secretion of vegetable constituents; the plant becomes deep green and grows luxuriantly.

Lime seems to produce reactions in the soil; supplying the sap with inorganic as well as organic ingredients, where it enters the root; but not exciting the vital transformation in the leaf, &c. Hence it will not produce rank vegetation; but hardens the straw and sends up materials for the grain.

Hence if the ammonia (or nitrogen) is in excess, the straw runs up deep green and soft; if the lime be in excess, pale and hard, or even dry, from over dosing with mineral constituents. But when both are present in due proportions, with the other requisite ingredients, luxuriance in growth and firmness of texture, are crowned with heavy ears. This brings us to the question. What is it to limit the quantity of our manures, and the consequent production, when they are applied in due proportions to their respective functions? Twelve quarters of wheat have been grown upon an acre; where lies the improbability of such a produce becoming not extraordinary? Lime we have plenty, for ages; and thousands of tons of ammonical matters are yearly washed away in the sewerage.

J. PRIDEAUX.

Plymouth, (Eng.,) Nov. 9th, 1842. [*West Briton, England.*

IMPROVEMENT IN THE CULTURE OF COTTON.

We publish in this paper the first of a series of three numbers on the Culture of Cotton, from the pen of Dr. Cloud, of Alabama, which, if we mistake not, will be of high interest to cotton planters. In a private note, dated Oct. 12, Dr. C. says—"I am this season absolutely raising from 3,000 to 5,000 lbs. of cotton per acre under the improved system, when the same land, under the system at present practiced throughout the cotton region, could not possibly yield above from 300 to 500 lbs. per acre, and with but a trifling shade of difference in the expense." In a later letter, Dr. C. informs us that he has actually picked 5,989 lbs. per acre.

[*Cultivator.*

No. I.

* * * * * It may not be improper, before entering immediately upon the discussion of the subject, simply to state some of the inducements, which the proposed improvement in the culture of cotton, holds out to the intelligence and industry of the planter. Its prime object is not so much to augment the number of bags, or multiply the number of pounds already equaling the consumption, as to curtail the enormous expense attending its production; thereby enhancing its value to the planter, in precisely the same ratio. In other words, I propose not only to show, but most satisfactorily to prove, that it is per-

fectly practicable to produce the 2,000,000 bags—the cotton crop of the United States—with *one-third* the capital engaged, under the present system of culture, in its production. Now if my premises be correct, my conclusions will appear not more fascinating and encouraging to the practical man, than axiomatic. To satisfactorily establish the fact, that the high grounds which I here assume, are not only founded in sound reason, but are tenable in practice, entertained and frequently expressed during the last two years, I have perseveringly devoted, with unceasing energy, the labor of the present season; assisted by careful observations drawn from experiments, as commenced by me last year. A faithful and detailed description of the two systems of culture, essaying neither to prejudice the one, nor accord undue consequence to the other, for the good of the country and the best interests of my fellow citizens engaged in planting,—shall be the single and express object with me, in preparing these papers for publication.

My first object then, as above specified—the work of this number—will be to furnish you, and all interested, with a "faithful expose" of the present, as I term, and shall prove it to be such, "kill and cripple, and in every way injurious system," by which the Cotton plant is now grown. To some persons, this course may appear at first view of the subject, as supererogatory and quite irrelevant to my purpose; yet I am convinced, that you, gentlemen, and the experienced planter, will view it widely different; since it would be perfectly idle to attempt the refutation of error, until its existence and baneful tendency be first shown. And here let me congratulate the good cause of reform and improvement, that in the discharge of this very delicate task, I shall be able most fortunately, to bring to my assistance, an article written "on the Culture of Cotton," which has given universal and acknowledged satisfaction. To the attentive perusal of that very excellent article, at page 49, of the current volume of the Cultivator, (March No) I wish most respectfully to recall your attention, and that especially, of every man engaged in the culture of Cotton, whose grand object is his own, his country, and posterity's welfare. This communication appears over the signature of M. W. Philips, of Log Hall, Miss. That your correspondent of Log Hall, is a gentleman of intelligence and experience in the culture of Cotton, under the present system, will appear at once obvious, when we come to examine carefully, which we should, the nice and perspicuous certainty with which he has detailed the several operations, even the smallest minutia, attending the tedious routine of growing cotton under the practice of the country. The satisfaction of those readers, who may not possess the convenience of reference to this article of Mr. Philips, as likewise the necessity arising under certain positions of argument, in elucidation of the several prominent features of advantage, which the proposed improvement offers to the planter render it proper that I make such extracts

therefrom, as will serve to illustrate here, the principles of the system. Previous to introducing such extracts, I here remark in reference to that performance, what I think the candor of every experienced planter will readily accord to it,—that it contemplates a greater degree of perfection in many of its operations, as practised by its author, than is common to the system as we generally meet with it among planters; hence the utility of its quotation, *hoc tempore et loco*. Mr. Philip says:—

"When our land has been the preceding year in Cotton, we either pull up the stalks, throw several rows into one heap row, roll them into heaps and burn; or thresh them down with cugdels, to be ploughed in. The latter plan I pursue. Having cut, heaped, and burnt up, what logs may be lying on the ground, we commence our ploughing operations by running a furrow, (straight on level land, with the hill on rolling or hilly land,) in the old water furrow with a shovel plough; to this we throw two furrows with a turning plough, and leaving it so until time to plant. Should the land have been in corn, many cut down corn stalks, pile and burn, (I plough all in,) and proceed as above; if in oats, I invariably flash deep with a two horse plough, and run off rows as before, 4 feet apart in thin land, and 5 in rich land; on our strongest land, rows are even as much as 8 to 10 feet apart. The ploughing so far done, cannot in my opinion, be done too early. From the 1st to the 5th of April, some seasons earlier, we commence planting cotton; having completed planting all corn that the land will admit planting, and now break out the entire row well, and as deep as we can, about 4 inches the deepest, being particular to break out just in advance of the hands planting. * * Then open out the furrow for seed, with some implement about three-fourths of an inch deep. * * This row should be as straight, or as regular in its curves as possible, to permit after work being done to the best advantage. In the furrow on the ridge we sow seed, having had them hauled and dropped in parcels at suitable distances in the field, from 2 to 4 bushels to the acre; not being particular, only in having enough; then cover with a wooden tooth harrow, or a board about 6 inches wide, 18 inches long, concave on the lower edge, and pinned with the heel pin of shovel plough on the chip. * * We do not desire to cover cotton over half an inch; and indeed the covering is not necessary, unless in dry weather; for a light shower will so beat the seed in the soil and compress the wool left on seed, so as to germinate immediately.

"Having planted about half the crop, we pursue other business, for a few days, so that an entire scraping comes on not at same time. One hand and horse can open 10 to 15 acres, 4 feet apart, one hand can sow seed, and one hand and team cover. But I

look on it as very hard to drop 15 acres; though I have done it myself, I could not have repeated. I always begin to scrape as soon as I have a stand up, grass or no grass, and no regular time for this."

This *first operation*, will be more familiarly recognised when styled, as it is by the great majority of planters, *chopping out*. Mr. P. continues—

"I have usually begun to scrape by running the bar of a turning plough next to row," (*a very common practice,*) "throw from the plant to water furrow about 1½ to 2 inches deep; but believing with others, it is not best to take earth from the bed, I now use a scraper, attached to chip of shovel plough, that will barely sweep off off the surface as near the plant as possible, throwing the surface toward middle of row. When this is well done, one good hand can clear the remainder as easily as is usually done with two ordinary hands, by passing the hoe through the row, cutting out all, to one or two stalks, the breadth of the hoe apart, say about 10 inches apart, leaving the row perfectly clean and scraped. ● * About a week or ten days we commence molding the plant with"—(the plough that may best suit the fancy of the planter.) "We make it a point to get the ploughs in at this work as soon after scraping as we can, and get back with hoes to clean once more, either by *scraping* again or dirting; and if pleasant weather cut out at this time every other stalk. (In poor land I have the stand as at first, single stalks about 10 to 12 inches apart;) reducing to a stand one stalk, in good land, *about* 2 feet apart, in rich land even 3 feet *at times*. If this has been done well and in due season, unless a wet spring, the push is over, as we now cultivate with double shovels, (I prefer it to any thing I have tried,) cultivator and harrow,) just as the growth of grass and appearance of earth indicate—governed by—keep clean and stir well. I throw a little earth to the plants, the two or three last workings, but never make a hill unless on hill sides, these merely to prevent washes."

This brings us to the opening snow white staple, blushing to the harvest, which we all gather in the same way, by the fingering operation, since Mr. ———'s boasted *Cotton picking* machine, (at Augusta, Geo.) proved a signal failure, as every such *inanimate neuter* probably ever will, in gathering clean cotton from the plant.

Having turned to and carefully read this article, (which I sincerely desire that every lover of truth do for himself,) I will now add my own testimony, by remarking, that we have here a most faithful and graphic description of the modus operandi of preparing, planting, and cultivating the cotton plant, as practised throughout the entire length and breadth of the cotton region from Charleston to New-Orleans, with variations so slight as not to affect the general result.

Having the subject now fairly before us, I shall conclude this paper, by making a few general observations, as preliminary to the special dissection of this *monstrous system*, to which I shall carefully attend in the next number. I first observe then, that it is matter of great astonishment to me, that this fallacious system, containing within itself, complete, the elements of certain destruction, has not long, long since exploded. Who among the intelligent planters in the south, and they are innumerable, that has not observed, yea more and sorely felt too, the very striking disparity that exists between the enormous investment of capital, in operating under this system and the meagerly accruing profits! This is not a question however, requiring a formal reply. We have only to look around us on every hand, and remark upon the dilapidated appearance which almost every cotton plantation, of but a half a dozen years standing, presents to the eye, sickening under this blighting influence! Not that the Southern planter has no taste for improvement; the very reverse is the fact; the very influences which our southern genial clime inspire, are both animating and improving; but the system of culture which he pursues, like a vampire, preys upon his vitals, withers his energies, and so saps his profits as to entirely forbid his attempting that improvement about his plantation, so necessary to convenience as well as comfort; and which he loves to admire. Under a scientific and judicious system of agricultural policy, which I contend to be the system best and most profitably adapted to the culture and maturity of the cotton plant, the very idea of wearing out and rejecting land, is a solecism: the constant and invariable tendency of such system is, to improve the soil and augment its production,—ameliorating thereby the condition of every object, both animal and inanimate, that comes within its resuscitating influence. But on the other hand, what have we to look upon as the effect of the present flaying system, but one uninterrupted scene of broad spaead ruin, and growing worse? Old worn out fields, red hills and gullied steeps,—admonitory lessons to posterity to migrate to other climes.

N. B. CLOUD, M. D.

Planter's Retreat, Ala. Nov. 1, 1842.

MANURES.

"Many a mickle makes a muckle."

Scape up the droppings from your cows in your avenues and door yards. Get together the rotten chips and bark from the wood yard. Collect the rich soil which accumulates in the holes and corners around the house, the barn, the hog pen, and all out buildings. If these materials are not wanted for immediate use, make them into a compact heap.

Have some expedient, also, for saving from the unfavorable action of rains and sun, what your cows drop in the barnyard during the summer nights. Covering the bottom of the yard with loam or muck, will preserve the greater part of the liquid secretions; but the solids will lose much of their worth, if not daily covered with the soil or muck. Where the barn is airy and has a cellar under it, we recommend keeping the cows in the barn every night of the year. They suffer no discomfort, and we know of no other way in which so much and so good manure can be obtained from them.

Also, have materials at the side of the hog-yard constantly, so that something may be thrown in every two or three days for the swine to work upon. Throw in not *too* freely, however; there is a limit beyond which it is not profitable to fill up the yard. For it is not true that every thing which finds its way within the four walls that confine the pigs, is immediately converted into good manure. We believe that two or two and a half cords is as much as one hog will ordinarily manufacture *well* in the space of twelve months. By occasionally putting in lime, ashes or stable manure, the quantity may be rendered somewhat more than this. But while we caution farmers against reducing the quality *too much*, we earnestly call upon them to be careful to furnish the swine with *enough* of the raw material.

You have been so often told that *manure—manure—manure* is the one thing needful for successful farming, that it seems almost an insult to say it again—and yet it is so true and so important, that we do say it. We tell you to collect and save and make *manure—manure—manure*. We would write this word over the doors of your hog-pens, your barns, your privies; near your ash-holes, sink holes and every other spot where the article can be manufactured. We would send you to the road-side, to the woods, to the sides of stone walls, to peat meadows and muck holes, for collecting matters to be converted into this essential article. We would send you *now*, as soon as the planting season is over, and would have you collect as much as possible. It were well to have years' supply always on hand in heaps. Thus placed it would be constantly improving; and if thrown over once or twice in a year the fermentations and decompositions it would undergo, would greatly enhance its fertilizing properties, even before it was handed over to the cattle and swine. Make manure: little by little, from day to day, will swell to a large pile in twelve months.

[*N. E. Farmer.*

EXPERIMENTS WITH SALT.

AT the request of the Editors, Mr. John C. Mather, of New-York, furnishes the *Cultivator* with the result of his experiments with salt as a manure. In the spring of 1838, he sowed five bush-

els an acre on land well broken and harrowed, which was much infested with the cut-worm, leaving a strip of half an acre on each side of the field unsalted, to test the experiment. The worms were destroyed, and the corn and potatoes manifestly better on the salted than the fresh land. This superiority has been continued to be manifested in three successive crops since. In time of drought, the salted land has exhibited a continued moisture, as manifested in the verdant green of the vegetable growth. Mr. Mather also states, that he has sowed salt on his meadows with such satisfactory results as determine him to continue its use.

[*Farmer's Cabinet.*

MESSRS. GAYLORD & TUCKER—I with pleasure comply with your request, and give you the detail of my experiments in the use of salt as a manure. In the spring of 1838, we broke up six acres of sward land that had been mowed a number of years, intending to plant it in corn, but observed when ploughing, that the ground was infested with worms; (the yellow cut or wire worm, and black grubs;) as we had mostly lost our corn crop the year previous, by having the first planting almost entirely destroyed by the corn worm, (above described) we expected a like calamity would follow the present year, unless some preventative could be used to destroy the worms. And having frequently and unsuccessfully used all the recommended remedies to destroy the corn worms, we were induced, at the suggestion of an English laborer, to try salt. After the groond was thoroughly harrowed, five bushels per acre was sown broadcast, leaving a strip of near half an acre on each side of the field, to satisfactorily test the experiment. The whole was then planted to corn and potatoes. The corn on the part where no salt was sown, was mostly eaten up by the worms, and was reploughed and planted to potatoes. The potatoes on the whole lot wore a good crop, but decidedly better where the salt was applied. I regret that we did not ascertain by measurement the actual result. There was a very perceptible difference in the appearance of the vines during the whole summer. On the part where the salt was sown, they grew larger and were of a darker green color, and continued green longer in the fall than the others. In the spring of 1839, we spread on a good coat of manure, and planted it all to corn, except about half an acre of the salted land, which was planted to Rohan potatoes. The Rohans were the best crop of potatoes I ever saw. Seed planted, two and a half bushels—produce, over 300 bushels. The largest potato weighed four and three quarter pounds. The corn was a heavy croy, but not measured. The summer was very dry and hot; but the corn on the salted land did not appear to suffer at all from the drought, while the other was considerably injured. The salted land appeared always moist, and the growth of every thing upon

it was very rapid. We found great difficulty in keeping the weeds down. After three successive hoeings, we were obliged in August to give it a hand-weeding. Spring of 1840, intended to have stocked the land down for meadow; but thinking it too rich for oats, planted potatoes without manure. Crop good. The effects of the salt still very apparent. Adjudged to be one third more potatoes where the land was salted.

Spring of 1841, sowed a part of the lot to oats, the remainder to potatoes and onions without manure. The onions were a great crop. The summer was very dry, but they did not suffer, while other crops in this neighborhood on similar soils, were nearly destroyed by the drought. The oats were a heavy crop, and much lodged on the salted part. The clover grew well and produced a fine crop of fall feed. This I cannot account for, except by supposing that the salt kept the land moist, or attracted moisture from the atmosphere, as I know of no other piece of land in the town that was well seeded last year: it was almost an entire failure; and the most of the land stocked down last spring has been, or will be ploughed in the spring to be re-seeded.

We sowed salt the same spring on a part of our meadows. The grass was evidently improved—the result satisfactory—and we shall continue to use it on our meadows.

I shall not at this time force upon your readers any opinions of mine respecting the manner in which salt operates beneficially upon vegetation or the soil. JOHN C. MATHER.

LIQUID MANURE.

"Although from the writings of agricultural chemists, it has been proved that one pound of urine will produce a pound of wheat, how seldom do we see it preserved at all! A writer calculates, that as much manure is lost in the escape of urine, as would, if properly applied, have an effect equal to the whole of the lime, the rape dust and the bones that are used throughout England!"

[*Selected.*

For the Southern Agriculturist.

EXPERIMENTS ON THE CULTURE OF CORN.

So. Mulberry, Dec. 8th, 1842.

Dear Sir,—Below you will find a statement of Mr. —— ———— experiment in Corn. He does not forbid the use of his name, but would prefer that it should not be given. The product is large for these parts, though it does not equal that mentioned in the slip which I enclose, as it may have escaped your notice. I may be able to furnish you with the other experiments by next Tuesday's post.

Yours respectfully,
SANFORD W. BARKER.

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The land lies partly on the top, and partly on the side of a hill sloping to the West. The soil is a light loam—it has been cultivated in corn for probably 25 years past. One planter's acre, 150 by 300 feet, was covered pretty thickly with fresh rice straw, and listed in, in the month of Dec. On this list were strewed 40 cart loads of well rotted stable manure, which were bedded upon the 12th March—beds 5 feet apart. It was planted on the 14th, one row on each bed, 3 grains flint corn at every foot. On the 18th of April, it was thinned to one stalk at each foot, and a light bed hauled up. It was twice hauled up during the season. Harvested on 5th October, and shelled on 3d inst. The product, 49 bushels 9 quarts—weight, a fraction short of 60 lbs. to the bushel.

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We have seen a certificate to the effect, that Mr. Latta, of this District, produced from off two and three quarter acres of land, which has been cleared 16 years, 360 bushels of shelled corn. One measured acre of the above, gave 100 bushels and 14 quarts.

[*Yorkville Compiler.*

CULTIVATION OF CORN.

The corn crop is, perhaps, second in importance to no other raised in the United States. In Central New-York, the crop of Indian corn is more important than any other of the grain crops, and any improvement in its cultivation, must of course be of great value to the farmer. We shall endeavour to give a brief view of

the most approved method of cultivation with which we are acquainted, and if any of our readers have doubts as to which is the best method, we only ask of them to give both a fair trial, and communicate the result for publication in the Farmer. And in the first place, we suppose the ground to have been well ploughed and harrowed, and the planting to have been well performed. If the corn shall have been fortunate enough to escape the grub and wire worm, (which, by the way we consider very doubtful, although at the time of writing, May 26, much of the corn is not above ground,) the next operation will be to give it a dressing with the Cultivator, if both ways, or twice each way, so much the better; and hoe well, taking care to leave the hills free from grass and weeds. The corn should now be thinned to four stalks in a hill, if planted three feet apart each way, and less if planted much thicker, and be sure to leave the best stalks. We think many farmers leave too many stalks on the ground, thereby preventing the oars from attaining that size which they otherwise would attain. If we do not greatly mistake, the crop of Mr. Barber, of Lee, whose corn-field was the admiration of all who saw it in the early part of last season, suffered considerably from this cause. Much, however, depends on the condition of the land—that which is rich requiring more stalks than poor soils. Aiter the first hoeing, the Cultivator should be passed through as often as can be done consistently with the other labors of the farm, and should be continued until the corn is too large to allow a horse to pass through it. The second hoeing may be done before the corn attains very great heighth; but care should be taken not to make much hill. This differs from the method formerly practiced in using the Cultivator, instead of the plough, and in leaving the surface level instead of hilling up as formerly. Of the superiority of the Cultivator over the plough for cultivating the corn crop, any farmer will be convinced by using a good article a single day. Instead of breaking the roots of the corn, and merely cutting a portion of the weeds, the whole surface between the rows is stirred, and if used twice in a row, it is seldom that a weed escapes. There is little danger of using the Cultivator too frequently where many acres are cultivated. We should be glad to give our field a dressing both ways, at least every week. The advantages of good cultivation are not confined to the corn crop. The succeeding crop of small grain will receive nearly an equal benefit, besides the additional chance of succeeding well with clover seed.

C.

[*N. Y. Farmer.*

A NEW METHOD OF CORN PLANTING.

THAT excellent farmer, Major John B. Peyton of our vicinity, a few days ago showed us a new plan on which he is planting his corn the present year. After the ground is bedded up, which all

farmers nearly with us do that they may work to a better depth, instead either of planting on the ridge, or in the trough or water furrow between the beds, he runs a bull-tongue just on the *side* of his ridge, opening the ground to the full depth of the ploughing, and after planting, covers his corn with a plough of the same sort or a narrow shovel, running it on the side of his row next the ridge. This furrow covers the corn lightly and evenly, and a harrow, or board fastened on a shovel stock to knock off the clods, completes the process.

By this plan the field is left nearly entirely level, as the first opening furrow throws the dirt into the water furrow, and to a great extent fills it, and the slight elevation which the original ridge will leave on one side of the corn-row will serve most conveniently for throwing to the corn as it is worked.

What the Major wished to avoid by this plan, was planting immediately in the water furrow, which he says is too cold for early corn to vegetate in, on the one hand, and planting directly on the ridge on the other, which throws the corn roots too high from the level of the field, and makes it liable to suffer by drouth besides being harder to work.

We ourselves consider his plan an excellent one. What do our readers think of it?

It is needless to say of such a farmer as Major Peyton, that all his rolling land is properly circled. [*South-Western Farmer.*

ELEMENTARY PRINCIPLES ON THE MANAGEMENT OF A FARM.

Before the mind perplexes itself in finding out the application of the sciences to the purposes of agriculture, it should first acquire useful knowledge of the rudiments of farming, just as a child should know the alphabet before acquiring the art of spelling. Examples—

1st. The extirpation of weeds.
2nd. Deep cultivation.
3rd. Pulverisation of the soil.
4th. Choice and saving of seed.
5th. Depth in sowing.
6th. Change or rotation of crops.
7th. Manuring.

Remarks.—1st. The extirpation of weeds forms the basis on which all experiments and improvements can alone succeed. Weeds diminish the produce of the crops one-half—increase the expense of manuring two-fold—and entail on the land perpetual labor. 2nd. Deep cultivation affords a more extended range of fertile soil, from whence the roots of the plant can derive nourishment; consequently, there must be more strength to give a

larger increase to produce. For instance spade cultivation on the poorest soil will yield more luxuriant vegetation than that broken up to the depth of single ploughs.

3rd. Pulverisation of the soil is a suitable preparation of the earth to a healthful condition for the receiption of seed, acts as a nursery-bed to the plant in its first stage, causes a more vigorous growth in its progress to maturity, and may be considered the very best preservative against smut.

4th. The choice and saving of seed is of great importance, because on the good quality and kind of seeds depends in a great measure the prolific tendency of the plant. Hence a less portion of seed is requisite, yielding a better produce than more of an inferior grain.

5th. The depth of sowing must in some degree be regulated by the weather and pulverised state of the ground. As a general rule, it is better to deposite the seed rather too deep than suffer it to be exposed too near the surface, to be destroyed by birds, vermin, and the severity of the weather. The system of drilling, under furrow, or dibbling, will be found most efficacious in saving the quantity of seed to the extent of nearly two-thirds!

6th. A change or rotation of crops is necessary to restore and purify the soil. There are certain properties in the land more essential to the growth of one species of plant than another. On this account it is obvious, that if too great an extraction of one of the component parts of the earth is allowed to take place, the whole must become inefficient. On this principle, it is desirable even to change the rotation system in the course of four or five years.

7th. Manuring the land forms a grand item in farming, both on account of its expense and its seed to replenish the land: it is, therefore, very important to know the art of managing this department with the greatest economy and preventing waste in any possible shape. Close attention to the first and second rules will prove a great assistance to the attainment of so desirable an object.

[*Boston Cultivator.*

GESTATION IN ANIMALS.

WE have seen several interesting reports of experiments that have been made to ascertain the period of gestation in domesticated animals, and from them we have selected the following:—

"The experiments made by order of Earl Spencer on cows, has been reported in the Journals of the Royal Agricultural Society, and is very full and satisfactory. The number of cows noted was 764. The shortest period in which a live calf was produced was 220 days, or not much over seven months, but no calf produced in less than 242 days, or about eight months, could be raised. The

longest period of gestation was 313 days, or ten months and nine days. Of the 764 cows, 314 calved before the 284 days, and 310 calved after the 285th day. From this it would appear that the probable gestation in the cow may be fixed at 285 days, or nine months and a half, and our own experience perfectly agrees with this."

"The report of M. Teisser of Paris, of his experiment, made on the experimental farm established by the French Government, both on cows and mares, shows the following results:—Of 582 mares which received the male but once, the shortest period of gestation was 287 days, or little more than nine months and a half —and the longest 419 days, or about thirteen months and a half, making a difference of 132 days, or over four months. Of 575 cows, 21 calved between the 240th and 270th day—544 calved between the 270th and 299th day—Mean 282 days—and 10 calved between the 299th and 321st day—Mean 313 days."

A German publication gives the following table:—

Animal.	Shortest Period.	Longest Period.	Mean Period.
Mare, - - -	322 days.	419 days.	347 days.
Cow, - - -	240 days.	321 days.	283 days.
Ewe, - - -	146 days.	161 days.	154 days.
Sow, - - -	109 days.	143 days.	115 days.

Professor Johnson observes, "That any calf produced at an earlier period than 260 days, must be considered decidedly premature; and any period of gestation exceeding 300 days must also be considered irregular; but in the latter case the health of the progeny is not affected."

NATIVE STOCK.

It seems to be a principle recognised, that cattle degenerate with a change of climate, with few exceptions; accordingly, every district in England has its peculiar stock, which is generally the native breed improved by judicious selection. So valuable is acclimation, that the judicious breeder seldom discards the native stock, but builds upon it by careful selection and crossing; and poor as our native stock of cattle may appear, we are little aware how much of that appearance is owing to indifferent keeping and bad management, or what vast improvement may be effected by a more judicious course. We once knew a physician in a country practice, who had a fine eye for a cow, and who, when he met with one that pleased his fancy, would purchase her, perhaps for eight or ten dollars, and by judicious keeping and management, increase her milk from a quart to several gallons at a milking, she then became the wonder of the neighborhood, and was soon purchased by some less judicious person at a very high price; another purchased

in her stead, showing the same result. And this person, who was a man of great observation and judgment, and devoted to agricultural pursuits, often declared his conviction of the ability, if his professional engagements permitted, to raise from our native cattle a stock for the dairy, equal to any that could be imported. The fact is, that for producing a good stock of our own, the material is not so much wanting in our cattle, for nature every where affords favorable specimens of her work; we only require more information and discernment amongst our breeders. What avails it to advise the best selection of the best individuals, if those are ignorant of anatomy, and of points indicating the qualities to be desired?

Cattle are used for three purposes; as oxen for draught, as producers of milk, or for the food they afford as beef. There are certain points of form giving activity and endurance to the ox, there are others, indicating a milking propensity in the cow, and there are others again, denoting a tendency to convert food into fat; the marks of each are certain, and easily understood by observation and study, but they no more come by *nature* than do reading and writing. We then advise our farmers to make themselves acquainted with these points of form, by resorting to the best works and obtaining the best advice they can procure on the subject; let them select a certain number of our native cattle, according to the information they shall obtain, and keeping them in the best manner, let them select from their offspring those individuals only as breeders, having the points they have learned to esteem; every year they will find the produce coming nearer their standard of perfection.

[*Union Agriculturist.*

COST OF RAISING PORK.

We have heard so many opinions as to the economy of raising our own pork in the South, and in our view there are so many erroneous calculations made on the subject, that we have concluded to usurp in a column or so the place of "the Cyphering man," our esteemed correspondent, and give our readers as fair an estimate as *we* can make of what it now costs our farmers to raise their own pork. We say there are erroneous calculations made on the subject; and such we consider all calculations from the prices of corn—governed, as those prices always are, by local and fluctuating circumstances. Our farmers as a body, are not to conclude that because the corn necessary to raise their pork, if sold at the current price would have realized more money than would have purchased that pork, that it is therefore bad economy to feed it to their hogs. This would apply to individual cases and neighborhoods, but would not apply to the community in the aggregate—for the plain reason, that corn is not an article bearing an uniform market value, or capable of export, at our domestic prices, and

that if all should sell their corn and cease to raise their pork, the relative prices of the two articles would soon change, and corn would become cheap and pork dear. The economy of raising a particular commodity is of course to be determined by the question of whether the labor bestowed on the production of that commodity, if directed otherwise, would realize more than the market price of the article desired. But the channels in which our labor is to be directed to settle the question must have an uniform and steady rate of profit before we can satisfactorily determine. The uncertain and fluctuating rates at which *corn* sells in our different neighborhoods, we therefore consider an unsafe guide in our calculations. There is a much safer rule for estimating the real value of the farmer's corn to him, than the prices so uncertain a market afford.

Adam Smith long since established a proposition in political economy which has stood, unshaken and impregnable, all the assaults of all opponents—that the value of an article is in exact proportion to the labor necessary for its production. If then we ascertain what amount of labor is necessary to produce the corn or other food to raise our hogs, and what is the value of that labor, we will at once arrive at the cost of our pork, and be enabled to judge of our wisdom in attempting to raise it.

We will confine ourselves to *corn*, as the most important and economical food for hogs—looking to peas, pumpkins, potatoes, &c. &c. only so far as they will save the feeding of corn.

What amount of corn then will raise a hog?

We take it for granted that every one going about hog-raising will go about it understandingly and correctly; and we could hardly be expected to make our calculations to accommodate those who *will* confine themselves to the landpike and alligator breeds, and *will* keep a hog on hands and expenses from two to three years, when other breeds and other management would make them more pork in one, with one third the feeding. We take it for granted, then, that every farmer will have *a good breed of hogs*—that he will breed his pigs to *come only in the fall*—and *never feed a hog over twelve months.*

Bred in this way, for the first two months the pig runs with his dam in the pea and pumpkin field, or the sweet potato patch, and lives upon what has cost the farmer next to nothing, and what would have been wasted had he not consumed it.

The first and second months, then the pig eats in corn,		*ears.* 00
The third, he eats say	2 ears per day,	60
The fourth,	3 " "	90
The fifth,	4 " "	120
The sixth,	6 " "	180
The seventh,	" " "	180
The eighth,	8 " "	240

The ninth, he eats say	8	ears	per day,	240
The tenth,	6	"	"	180
The eleventh,	6	"	"	180
The twelfth,	15	"	"	450
Total,				1,920

Or, at 100 ears to the bushel, 19 20 hundredths bushels, say for the sake of even numbers, 20. We have put the tenth and eleventh months lower than the preceding, because about that time the farmer's fields may be supposed to be open, and peas, grass, pumpkins, &c. will supersede the feeding of much corn. The twelfth month we suppose the hog will be in the fattening pen, when the 15 ears per day or their equivalent in other food we apprehend will be an ample allowance. The calculation of the food necessary through the different months is made mostly from our own experience of what a hog will require to be kept in fair growing order, and the allowance we make, with the grass and other food a hog will pick up, we are confident will keep any good breed in killing condition through the whole year. On this allowance we may calculate that the average weight of the hogs, when killed, will be about 220 lbs., and this 220 lbs. of pork has required 20 bushels of corn.

What amount of labor is necessary now to produce this corn?

A man with a horse and proper utensils can cultivate 20 acres in corn. The average yield on the generality of our land we take to be about 25 bushels per acre. So that a hand can raise 500 bushels of corn per year—enough to raise 25 hogs, or 5,500 lbs. of pork.

What now is the value of that labor? To answer this question, we might either take the interest on the cost of the hand, the horse and the implements, and their necessary annual expenses, or we might take the customary rate at which labor is hired. Either of these modes of calculation, however, we think less satisfactory than another. Labor is worth what it will produce; and cotton, the great article of our production, has been less fluctuating in value than either the price of negroes or their hire, and farm expenses. A hand and horse, then, who would make 500 bushels of corn, or 5,500 lbs. of pork, we think would make, at the most liberal estimate, an average annual crop of 7 bales or 2,800 lbs. of cotton. This, at 7 cents per lb., (higher than the present average price,) is $196. So that the labor necessary to raise the 5,500 of pork, devoted to our most saleable crop, would now produce $196, and is therefore worth that amount. The pork, costing what the labor necessary to produce it is worth, stands us then a fraction over 3½ cents per lb. ready on our farms, without the trouble of marketing or wagoning.

We make both as to the crop of corn and of cotton, a hand can raise no deduction for expenses or consumption; as we suppose

the difference between the two crops in this respect would be but little, though that little in favor of the corn and pork raiser. We have just taken the highest average crop we suppose a good hand could raise of each, devoting himself entirely to that one article. Nor do we make any estimate of the trouble of feeding and killing our pork, as we suppose that more than balanced on the other side by the additional trouble of a cotton crop—the getting it to market and exchanging it for pork, and getting that home in return. Besides this the land and the manure a herd of hogs properly kept, would make, would more than compensate the trouble of keeping and killing.

From the above calculations then, we may deduce what we consider the most accurate rule for determining the cost of our pork and the economy of raising it. *Each pound of home raised pork costs cotton the planterwithin a fraction of a half pound of cotton.* (Or what is the same thing the labor necessary to raise the pound of pork, would raise the half pound of cotton.) Knowing then the market price of both articles, each for himself may at all times calculate whether economy requires him to raise pork or to buy it.

We may have made many errors in our estimates above, and we request our correspondents to give us their assistance if they think it necessary. The importance of the subject is worthy of close attention. [*South Western Farmer.*

STALL FEEDING.

Directions to Stall-feed Cattle—read before the Philadelphia Society for Promoting Agriculture, June 1, 1842. By JAMES MEASE, M. D., *Vice-President.*

1. The subjects on which it is intended to lay an extra proportion of fat, must be in good condition when put up—otherwise they will not pay for the cost, feed and care.

2. Give one handful of fine salt three times weekly to each beast.

3. The hay must be of the first cutting, (if clover) and well cured —that is, not left before cutting in the field, until the stems are deprived of all nutritious moisture, the leaves and blossoms turned black, and when cut, turned day after day in making, until they fall off from age, and exposure to the sun, and probably a rain or two. These consequences (the last excepted) are the invariable result of sowing timothy with clover seed; for the first grass does not attain its full growth until two weeks after the latter is fully ripe, and farmers almost always refuse to cut the crop until timothy is fit to mow. The union of orchard grass with clover, does not admit of the objections to which the first combination is liable, for both progress equal to maturity, and if cut when in full blossom, and not kept too long in the field, make a hay which cannot

be exceedeed. Hay should be given thrice daily, and no more put in the rack at a time, than the animals will eat before their next allowance, as they become fastidious by confinement, and will refuse their hay upon which they have often breathed, and which is also impregnated with the confined air of the stable. At night, enough must be given to last until the morning, and the remains of the former supply at all times taken away, to give place to a fresh one.

4. Water is to be given twice a day, and, if convenient, the animals may be walked to the spring, creek, or pump. The exercise will amuse them, promote their appetites, and aid of course the object in view.

5. After their hay is eaten, give from ten to sixteen quarts of Indian corn and oats ground together, to each head three times daily during ten days; then half a peck of boiled mashed potatoes, with a handful of corn-meal sprinkled over them. The water in which the potatoes have been boiled must be thrown away, as I know it to be hurtful to animals. In a week, a change may be made of chopped pumpkins, or sliced swedish turnips, or sugar beet, for the potatoes. The new food will invariably encourage appetite, unless in the event of any aversion to some one article, for which no cause can be assigned. Indian corn-meal, with or without oats, must be the never-failing accompaniment of any other food.

6. Great care must be taken to watch the appetites of the animal, so as never to cloy it; otherwise time will be lost. He must on no account be over-fed—and to avoid this, during the occurrence of an increase of temperature in the air (or "a warm spell") which takes place almost evory winter, the usual allowance must be diminished. The farmer should take the alarm the hour that he sees the animal leave any of his usual allowance in the trough or rack, clean out both, and by a daily walk, extra carding, and, if necessary, a dose of Glauber salts, try to restore the appetite.

7. The food, other than hay, should be given in a box and in the trough alternately, which should be daily washed or dry scrubbed, and scraped, to prevent the remains of a former mess from turning sour, which will infallibly disgust the ox. This was the uniform practice of that first rate farmer, Joseph Cooper, of New-Jersey, who urged its adoption upon the writer, as one with the importance of which his own ample experience had fully impressed him.

8. Flax-seed jelly, with corn meal, is of service occasionally to soften and loosen the skin, and produce that "kindly feel" in it, which the great English improver, Bakewell, ranked as an essential point in the choice and feeding of cattle; meaning thereby a "mellow, soft feel, yet firm to the touch, and which is equally distant from the hard dry skin peculiar to some cattle, as it is from the loose and flabby feel of others."

9. Carding the animal thrice daily with appropriate cards, is an all-essential part of the process. The operation is highly grateful to the animals, and its effects eminently salutary. It promotes the action of the small vessels on the surface, and the muscular fibres, which sympathize and act indirectly upon the stomach. Medical men are well acquainted with the intimate connexion subsisting between the state of the human corporeal surface, and the stomach and viscera connected with digestion, and the same connexion is observed in the ox when feeding.

10. Regularity in the hours of feeding and watering is essential.

11. Cut straw, free from mould or smell, may be given once a day, by way of a change, slightly sprinkled with corn-meal and salt. It will be eaten freely. The stable should be well ventilated, if possible—for the more pure the air, the more keenly will the animals eat. The utmost attention must also be paid to cleanliness. The animals must not be permitted, when leaving the stall to drink, to walk through a yard covered with wet manure, and to return to their stall with the clefts of their feet filled therewith—for, owing to the acrimony of the liquid, a sore therein will be the almost certain effect, with a consequent loss of appetite.—This cleft must be occasionally examined in both oxen and sheep, and if found sore, should be washed with soap and water, when the application of a dossil of tow, dipped in spirits of turpentine, morning and evening, for three or four days, will remove it.

12. Clean bedding is a point obvious to all.

[*Philadelphia Saturday Courier.*

POULTRY INQUIRIES.

An "Inquirer" has submitted to us a variety of queries in relation to poultry; the nature of which will be sufficiently indicated by the replies, without occupying a column by their insertion.

1. As to buildings, it matters not how cheap and simple the poultry house may be, if it is made to combine the qualities of security from vermin, ventilation in summer, and indeed at all times; and warmth in winter. We would not advise any farmer who does not intend to make the rearing of poultry an important part of his farm business, to make any extensive structures for their use.

2. Hens should not lay near those that are setting, or with them, as trouble will most assuredly ensue. If two hens wish to set together, shut one of them up for a few days and there will be no difficulty.

3. Boxes for hens to lay, or set in, are best when placed around the lower part or floor of the building, rather than in tiers above each other, as they will be less likely to interfere with each other. The front part of the boxes should be partially closed, as fowls on their nests dislike notice.

4. Hens might escape small vermin by having their nests on the ground, but eggs will rarely hatch well in that position. Straw or hay should form the nest.

5. The best preventative of vermin we have ever known, is a box of sand and ashes for them to dust themselves in at all seasons. We have never known fowls injured by vermin, that had access to such boxes; and if provided with these, and limestone gravel, they will be rarely troubled with the gapes. We have kept poultry for thirty years, and have never, to our knowledge, lost a fowl from this disease. We have little doubt, that where the premises occupied by poultry are once infested with vermin, removal will be useful; or a thorough cleansing and white-washing may be adopted.

6. We know of no way of preventing hens from laying where they please, unless by confining them to their houses or yards.—An egg placed in a nest will frequently attract them to that spot, but not always. Fowls will, however, always do better with the same feeding, to run at large at all seasons, the coldest weather excepted, than if confined to houses or yards.

7. The Malay and the Molucca are the same, or with very slight variations. The Dorking, originated in Surry, England, is pure white, and is distinguished from all other varieties by having five toes on each foot. The Game breed of fowls is slender in form, and their eggs small, but their flesh is superior to all other kinds in richness and delicacy. Their pugnacious disposition is the great objection to this breed.

8. Breeding in and in affects fowls, as it does other animals, very injuriously; and a change of cocks occasionally, or as often as every second year, is necessary.

9. With the breeds of fowls commonly reared in Virginia, we are unacquainted, and know not whether the Dorking or Poland breeds exist there in purity or otherwise.

10. Eggs may be kept for a long time in salt; but eggs intended for setting, should always be new as possible; keeping them in any method injures them for this purpose. Neither corn-meal, bran, or sand, will preserve eggs as well as salt. Salt prevents that increase or variation of temperature that all these allow.—Protection from atmospheric change, and a low temperature, are requisite for the keeping of eggs; and where salt is used, a few inches of this material is all the covering necessary.

11. Sulphur is one of the best substances for freeing all animals from vermin, by feeding it to them occasionally. Although we have never known the slightest injury result from its use, excessive quantities might possibly prove hurtful, and they are certainly useless.

12. The common duck or mallard is the only variety that can be profitably reared, as all others appear less hardy, require more care, and being wilder, are more disposed to make their escape.

We are not aware that the wild turkey has ever been crossed with the domestic one, or that a successful attempt has been made to domesticate them. Such attempts appear to be scorned equally by the wild turkey and the partridge. [*Cultivator.*

ON DRIVING BEES.

Frequency of occasion for driving Bees.—Its advantages in taking honey.—A successful method of doing it.

It sometimes becomes necessary, or it may be desirable, to transfer bees from the hive in which they were first established to another. Several considerations may make this expedient; the hives may become damaged or decayed, as for example, when barrels are used for the purpose, as is very usual, exposure to damp and the action of the sun, occasions the staves to warp and the hoops to burst asunder. It is equally necessary when the hives become infested with the bee-moth, or worm. In either case the honey will be lost and the bees perish, unless secured in a better habitation.

The barbarous and wasteful practice of suffocating or destroying the bees for the purpose of taking the honey, would also be abandoned, if it were generally known with what facilities bees may be driven from one hive to another. If this be done at a proper season, say about the first of July, all the honey in the old hive may be saved, and time will be allowed them to make ample provision for support through the winter. Having succeeded in all my attempts at driving bees, I now propose to make known, for the benefit of those interested, and with a view to the preservation of this industrious and valuable little insect, the simple and effectual mode of operation I have pursued, premising that the only difficulty I have experienced is not in transfering them from one hive to another, but in reconciling them to their new habitation. The new hive should, therefore, be scrupulously clean and sweet. This, however, all know to be equally necessary in taking a new swarm. Having determined on the hive to be driven, place on the ground in front of the stand on which it is fixed, and within eight or ten feet of it, a box, block, or an empty bee-hive twelve or eighteen inches high. By the side of this, the most remote from the hive, kindle a small fire, using scraps of old dry leather, old worn out shoes will answer, as the principal article of fuel; provide a sufficient quantity of cut grass, damp straw, hay, or green Spanish moss, in order to keep down the blaze and produce as dense a volume of smoke as practicable. This done, remove the hive from the stand to the box near the smoke, placing the new hive immediately on the same spot on which the old one stood; then remove a part or the whole of the top or head of the hive to

be taken and placed, and as nearly over the smoke as can be done conveniently. By placing a short piece of plank on each side of the fire and in connexion with the box, on which the hive stands, the smoke may be readily driven through the hive and with it the bees. These, as they escape from the top of the old hive, direct their flight at once to the stand from which they were removed, and take refuge in the new hive placed for their reception. The whole operation is performed in a few minutes. This is best done in a damp drizzly day, or about twilight in the evening.

B. L. C. W.

[*Southern (Natchez) Planter.*

VALUABLE NATIVE GRAPE, AND OHIO EVER-BEARING RASPBERRY.

THE following is extracted from a letter by Mr. Longworth, of Cincinnati. The fruits which he describes are certainly well worthy the attention of our fruit growers here. The letter was sent to a friend of Mr. Longworth in this city, and contained directions to be given to whoever might be employed to sell the vines and bushes. It has been put into the hands of Messrs. Breck & Co., of Boston.

The writer says: "A box has been sent to Boston, directed to you, containing 160 of the Ohio grape and 200 of the Ever-bearing raspberry. The grape, he (the salesman) *will warrant* as *superior to any other native grape*, for the *table*. It is *entirely* free from the *hard* pulp common to the Isabella, Catawba, and other native grapes.

The bunches large, long, and beautifully formed, often measuring ten inches in length, and the fruit resembling the Meunier grape, and of equal quality for the table, but the bunches *three times* the size. The vine is of thrifty growth and hardy.

The Raspberry bears an abundant crop, very early, and continues bearing till frost; the fruit less abundant, but larger and finer than the first crop. It has been tried in the vicinity of New-York, and a gentleman to whom I sent it six years since, and now with me, tells me that a week since, (the last of Oct.) he had an abundant supply on his table. It succeeds better at my sister's in Newark, than with me. The summers there are less hot, and the soil clayey. My ground is too rich and dry, and our summers too hot, for the fruit to do as well in my garden, in the heat of summer, as in other locations. But notwithstanding this, my table is supplied from the last of May till November.

The price of the grape roots will be $2 each: $18 by the dozen. The raspberries $1 each, or $9 per dozen.

The quality of the grape for wine, I have not sufficiently tested, to speak of it as a wine grape. It is my best native grape, yet I have three other varieties free from any hard pulp, and far superior to the Isabella or Catawba, and perhaps of equal quality with the Ohio grape, but the bunches are not as large, nor as handsomely formed.

Let him (the salesman) charge purchasers not to lay in the wood too close. The wood requires to be laid in *thin*, that the branches may have the benefit of sun and air. I will not only have the money returned if this grape does not prove such as I recommend it, but will give $500 for a single root, of a *native* grape, producing fruit in *all* respects *equal* to it. For thirty years I have tried to raise foreign grapes in the open air, without satisfactory success. The native varieties I now have, satisfy me to do without them."

[*N. E. Farmer.*

MISCELLANEOUS.

CURE FOR DISEASES IN PEACH TREES.

Formerly, Peaches were raised in abundance in this county; but of late years, they are very rarely found. The Peach trees in this region become diseased, and soon decay and die.

In one of our exchange papers, we find the following application recommended by a gentleman in Maryland, who has successfully used the same. The application to the trees consists of salt and saltpetre combined in the proportion of one part of saltpetre to eight parts of salt; one half pound of this mixture to a tree seven years old and upward, to be applied upon the surface of the ground around, and in immediate contact with the trunk of the tree; this will destroy the worm,—but to more effectually preserve the tree, I also sow this mixture over my orchard, at the rate of two bushels to the acre. The size of the fruit is increased, and the flavor very greatly improved, the worm destroyed, and the Yellow prevented. This is a remedy in the reach of every farmer, who has trees, and is well worthy of a trial. J.

BAD FLAVOURED MILK.

It is frequently the case, that some particular articles of food, unless precaution is used, give a disagreeable flavor to the milk and butter of our dairy cows. Cotton seed are objected to by many as food for milch cows on this account. These, if boiled, as Dr. Williams in one of our former numbers reccommends, lose, he says, this quality. Turnips also communicate a flavor to milk.—

And many wild grasses and plants do the same. In Warren county, there is a species of wild cress or pepper grass quite plentiful on nearly all the old fields, which not only gives a disagreeable flavor to the milk of cows which graze it, but renders the beef of cattle feeding on it, entirely uneatable. At the north we perceive that the way the farmers avoid a bad flavor in their milk and butter from turnips or wild plants, is not to allow the cow to eat any of the objectionable article for several hours before her milking time —making hay, clean pasture or other sweet food, always succeed the article which flavors the milk, and precede the milking. If a cow for instance, is fed on turnips, the turnips are the first food given to her after her udder is stripped, and she then has hay or other sweet food before she is milked again. Or if a cow runs on a pasture, on which grows wild garlic or other plant, giving a bad flavor to her milk, she is first stripped before she is turned on such pasture, and several hours before her milking time returns, she is taken from that pasture, and given sweet food, or turned on another pasture on which she will find none of the flavoring plant.—This treatment we see, from the experience of many in our exchange papers, is effective; and we have no doubt a similar management will reliefle our Warren friends of the flavor of pepper grass in their milk and beef. [*So. Western Farmer.*

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TOBACCO.

The powder or dust of tobacco thrown over a bed in the garden, when the plants are just coming up, will save them from worms, which frequently destroy them before they are fairly broken through the ground.

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REMEDY AGAINST FROST.

It is recommended, in some of the French agricultural papers, to deposite some wet strawy manure in the forks of a tree when in blossom, to protect the fruit from frost. If applied in the evening, it is said, that, should frost occur in the night, it will be visible on the upper surface of the manure, but the fruit buds or blossoms will wholly escupe injury.

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METHOD OF COOKING SALSIFY.

Boil Salsify or Vegetable Oysters till the skin will come off easily. When you have taken it off neatly, cut the roots in bits as long as an oyster; put into a deep vegetable dish a layer of crumbs of bread or crackers, a little salt and pepper and nutmeg, and a covering of butter as thin as you can cut it; then a layer of oysters, till your dish is filled, having crumbs at top. Fill the dish with water, and brown them handsomely. They can remain two hours in the oven without injury, or be eaten in half an hour.

MONTHLY CALENDAR
OF
HORTICULTURE AND FLORICULTURE,
FOR JANUARY, 1843.

[Originally Communicated for the Southern Agriculturist, in 1835.]

VEGETABLE GARDEN.

In this and the succeeding month we usually have our coldest weather, consequently there are but few things that can be planted in January, with any tolerable certainty of success. The industrious gardener, however, will find many things requiring his attention.

Peas.—In the early part of this month a crop of Peas may be sown, in a warm and sheltered part of your garden. Choose for this purpose the earliest and the hardiest variety. The rows may be three feet apart, and if sticks can be conveniently procured, they should be set in the rows in the usual manner.

If you have Peas sown in former months that are somewhat advanced, their growth will be promoted by having a little earth drawn up to their stems.

Cauliflowers and Broccoli.—These vegetables, especially the former, are at this time much endaugered by frost. They may be protected in a great measure by binding bands of hay or moss around the stems, and about one-third of the leaves, and either tying the leaves together at the top, or placing there a small quantity of hay. The Broccoli only requires protection in very cold weather.

Beets —Towards the close of this month you may venture to sow a few early Beets. Make your bed about five feet wide. which is to be well dug and pulverized. Draw drills about 12 inches apart, and an inch and a half deep, put 3 or 4 seeds together in a hole, one plant only, and that the finest being finally suffered to remain.

Onions.—Let your Onions have frequent hoeings, and the ground be kept loose. When considerably advanced, let the stems be twisted and pressed down with the hand, this will prevent the stalk from growing too large, and will increase the size of the bulb.

Leeks and Eschalottes.—These vegetables will, like Onions, require constant stiring, and be kept clear from grass and weeds.

Parsley.—This is usually considered the most favorable month for sowing Parsley seed. The seeds may be sown on some fine dry day towards the close of the month, either around the edges of your beds, or in a separate bed. The variety called Curled Parsley is preferable to the other, although the latter, from some cause, (probably that of its being most hardy) is usually found in our gardens.

Celery.—Take the advantage of some dry day and earth up your Celery plants. Many of these will now be fit for use.

Winter Beans.—You may now plant in rows 4 feet apart, 5 or 6 inches in the row, and 2 or 3 inches deep—the Windsor or Mazagon Bean. These coming in the early spring, when few other vegetables can be obtained, will be found very acceptable.

Cabbages.—Towards the latter end of this month, you may sow a few Early York or Sugar Loaf Cabbage. Dig the ground a spade deep; the seeds may be

thickly sown, and if the weather should become severe before the plants are out of the ground, you should strew some light litter over it. Should you have Cabbage plants of sufficient growth for transplanting, they should now be set out.

Turnips.—Should you have good English Turnip seeds of the Early Dutch or Red Tops, a few may be sown as an experiment this month.

Spinach.—Although this is not the most suitable month for sowing Spinach seed yet, a few of the round leaf kind may be sown, as they will come early in the spring.

Endive.—On some dry day take the opportunity of preparing your Endive for blanching. Tie the top leaves of each plant together, and with a small hoe draw the earth around them. Some of them may be fit for use in 10 or 12 days after.

Radishes may be sown this month at intervals of two or three weeks for constant use. As the severe frosts are likely to destroy some of the young plants, the seeds should be sown somewhat thicker than usual.

Horse Radish.—This very useful vegetable is too much neglected in our Southern country. It is cultivated with great ease, and after the shoots have taken root requires little attention.

Horse Radish is multiplied either from the small cuttings of the roots, say about 2 inches in length, or from the crowns of the old roots, taken off about half an inch below the top. They may be planted in rows 13 inches apart, 6 inches from each other in the row, and a foot deep. The plants will be fit for use in the following autumn, although it will be preferable not to dig up the roots till they are 18 months old.

FRUIT GARDEN.

This a suitable month for transplanting Peach, Nectarine, and indeed all kind of Fruit Trees. Pruning may be attended to this month, although it is generally considered preferable to attend to this work at an earlier period.

Vines.—You may still prune the vines, but this work should no longer be neglected.

Raspberries.—This is the most suitable month for pruning your Raspberry plants; cut off the old wood, leaving several of the strongest young shoots, from which alone you have a right to look for fine fruit. Take about one-fourth of each shoot. Should you be desirous of setting out new beds, you are enabled to do so from the superabundant shoots found on the old bed, these should be planted in rows 4 feet apart, and 3 feet in the row.

FLOWER DEPARTMENT.

You may now begin to transplant evergreens. *Geranium cuttings* may now be planted in the green house. It is not yet too late to sow Larkspurs, and the seeds of Biennial Stocks, or even Poppies.

CHARLESTON, MARKET HALL, 2d January, 1843.

Memorandum of Stock, &c. brought to Market during the week ending the 31st ult., viz: 168 Beeves, 292 Hogs, 24 Calves, 80 Sheep, and 11 wagons with Bacon and Poultry.

PRICES CURRENT THE PAST WEEK:

Beef, 4 a 8 cents per lb.; Veal, 8 a 10 do. do.; Pork, 6 a 8 do. do.; Mutton, 8 a 10 cents per lb., Lamb, 00 do. per lb.

Memorandum of Stock, &c. brought to Market for the quarter ending 31st Dec. 1842: 2,709 Beeves, 193 Calves, 4,978 Hogs, 1,520 Sheep, 73 Lambs, 222 wagons with Poultry, Bacon. &c.

ROBERT MACBETH, Clerk of Markets.

GODEY'S LADY'S BOOK.

It is but seldom that we recommend to our friends any of the publications of the day; for truly they are so numerous, and many of them so excellent, that is somewhat difficult to make a selection. We cannot but deviate this once, in favor of Godey's Lady's Book, which we strongly recommend to our female friends. No work of this description has improved more of late than this. It is edited by Mrs. Hale and others, and ranks among its contributors, nearly every writer of reputation in America. It is embellished every month, with from two to four fine engraved plates, (one of which, being the fashions) most beautifully executed. In addition to the usual plates given, in the January number we find a colored plate of several Birds exquisitely done.

The Plates alone we consider fully worth the subscription price of the work, which is for a single copy $3—2 years $5—Five copies for one year $10—Eleven copies for one year $20.

French Fruit Trees—Camillas, &c.

THE Subscriber has on hand an excellent assortment of FRUIT TREES, imported by him direct from Paris last Spring, and which he had planted out here. They consist of PEAR, APPLE, CHERRY, APRICOT, PLUM, Madeira WALNUT and JUJUBE TREES. Many of the Pears and Apples blossomed last Spring and some bore fruit. It is therefore *presumed* that a large number will do so the coming season. He also expects in the month of December a further supply of Fruit Trees, Roses &c from Paris.

He offers also, for sale, Peach, Nectarine & Apricot Trees of American growth; and will also receive orders which will be executed at 10 per cent. on cost and charges, for any discription of Fruit Trees, Ornamental Shrubs, or Plants, from the Nurseries of *Sinclair & Corse, of Baltimore, Robert Buist, of Philadelphia,* or any of those in the neighbourhood of *Boston.*

The prices of the French Fruit Trees vary from $1 to 2, according to the size of the Trees. The American Trees are at from 37 to 75 cents.

Also, remaining from last year's Stock,

A few very fine varieties of CAMILLAS, AZALIAS and other Ornamental Green-house Plants, and a choice collection of ROSES, consisting of Tea, Bengal. Bourbon, Perpetual Damask, &c. He expects also, to receive a further supply of the above at the proper season.

J. D. LEGARE,

October 29 **No. 81, East-Bay, Charleston.**

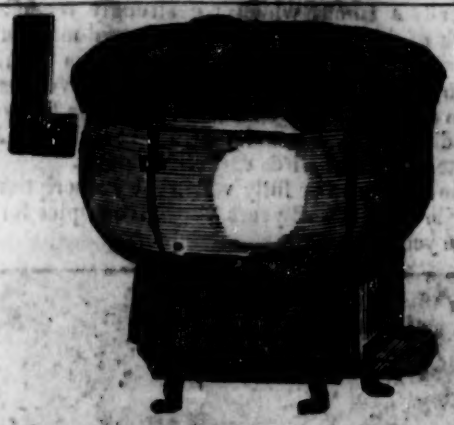
MILLER'S
PLANTERS & MERCHANTS'
ALMANAC.

FOR THE YEAR OF OUR LORD,

1843.

For Sale at his Store, by the groce, dozen, or single.

Payments to So. Agriculturist.—R. T. Marks, Columbus, Ga., for 1839, '40 & '42. S. H. Dickson, S. T. Gailliard, J. P. Palmer, F. K. Huger, Dr. J. J. O'Hear, James Green, for 1842.
Charles F. Noyle, 1843, $3.



Mott's Combined Agriculturist's Furnace and Caldron.

THIS article is a Boiler or Caldron, set in an Iron Stove or Furnace, so constructed that the heat encircles the boiler to its upper edge. They are portable, and can be removed from place to place as convenience or necessity may require. They are adapted for all mechanical purposes requiring large boilers. No farmer or planter should be without one; particularly useful for heating water for WARM BATHS.

They are made of the following sizes:—

15 gallons,	50 gallons	100 gallons
30 "	60 "	120 "
40 "	80 "	150 "

These Furnaces have many advantages over Caldrons set in the usual mode:

1. Being portable, they may be removed from place to place, as occasion or convenience may require.
2. Require only a few lengths of pipe to fit them for use.
3. The fire-place and flues are so well arranged that the consumption of fuel is less.
4. The Caldron can be lifted out and in, to make any examination, or to clean the flues, without the expense of re-setting.
5. They cost less, when the expense of labor, bricks, lime, and the frequent re-setting are taken into account.

To set a Caldron with brick in the most approved mode, requires an experienced workman, who cannot be obtained at all times without great inconvenience.

J. D. LEGARE, 81, *East Bay, Charleston.*

BOOK & JOB PRINTING

AT THE

OLD STAND, NO. 4 BROAD-STREET.

MILLER & BROWNE,

RESPECTFULLY inform their friends, and the public generally, that they execute all kinds of Plain, Ornamental, and Fancy Printing in the neatest style, at short notice. They solicit the patronage of their friends.

They have just received a splendid assortment of COMBINATION BORDERS, for Cards, Fancy Store Bills, &c. which will be worked in the most variegated and beautiful style.

January, 1843.